2018 Systems of Signal Synchronization, Generating and Processing in Telecommunications, SYNCHROINFO 2018, 2018

Determination of the Optimal Number of Realizations of the Modulating Sequence of the PSK-n signal Necessary for Estimating the Error Probability per Symbol Caused by the ISI Produced by Linear Selective Systems

Khairullin M., Lerner I., Ilrin V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2018 IEEE. the problem of estimation of the optimal number of realizations for necessary PSK-n modulating sequence to estimate symbol error rate caused by ISI produced by linear selective systems is considered in the paper. Estimation of the optimal realization number for this case is carried out based on numerical simulation of communicating channel. Dependencies, which allow to estimate value of specific number of optimal of realization per discrete state, are shown in the article, appropriate recommendations are provided.

http://dx.doi.org/10.1109/SYNCHROINFO.2018.8457065

Keywords

capacity, numerical approach, PSK-n-signals, specific number of optimal realization, symbol error rate

References

[1] Sh. M. Chabdarov, R.R. Faizullin and A.F. Nadeev, "Post-correlation probabilistic models in the problem of signal discrimination for modern information and communication systems", Russian Aeronautics. 2014, No. 2, pp. 175-180.

[2] R.R Faizullin, V.V. Kadushkin and M.S. Vorobev "Synthesis of poly-Gaussian quasioptimal algorithms for multiuser detection problem and non-Gaussian interference", Russian Aeronautics, 2015, No. 3, pp. 345-350.

[3] I.M. Lerner, "Method for capacity estimation of real communicational channels with psk-n-signals in presence of ISI and its application". TComm, 2017, vol. 11, no. 8, pp. 52-58.

[4] I.M. Lerner, Analytical estimation of capacity of the communicational channel with the frequency response of the resonance filter in the presence of ISI and the use of PSK-n-signal. T-Comm, 2017, vol. 11, no. 9, pp. 65-73.

[5] A.E. Mordvinov, Issledovanie vozmozhnosti povysheniia chastotnoi effektivnosti linii sviazi za schet ispol'zovaniia signalov s vzaimnoi interferentsiei simvolov. Diss. kand.Tekhn. Nauk. [Possibility of increasing the frequency efficiency of communication lines due to the use of signals with mutual interference of characters. Can.Tech. sci. diss]. Moscow, MEI (TU), 2008, 150 p.

[6] J. G. Proakis, Digital Communications, 4th ed., N.Y.: McGraw-Hill, 2000, 928 p.

[7] V.V. Kadushkin., I.M. Lerner "To the conditions determination for the emergence of a periodically non-stationary random process of a phase settling of PSK-n-signal a at the output of a linear selective system", 2018 Systems of Signal Synchronization, Generating and Processing in Telecommunications, in press

[8] Evtyanov S.I. Perehodnye processy v priemno-usilitel'nyh shemah [Transient processes in the receiver-Amplifier circuits] Moscow. Svjaz'izdat, 1948, 221 p.